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14. ABSTRACT

The focus of this grant is to investigate immunoprofiles for serum antibodies to aberrant glycans in human and animal models of mesothelioma. This is accomplished using a one of a kind printed glycan array which is at NYU School of Medicine (NYUSoM). It is hoped that these experiments will allow us to diagnose and prognosticate mesothelioma more accurately in the future. We have been severely limited by our ability to start the human mesothelioma glycoprofiles as well as the animal profiles due to delivery and set up times for our one of a kind glycomics laboratory at NYUSoM. We summarize the situation in the progress report with the good news that we will be moving onwards in June with these studies.

15. SUBJECT TERMS
Malignant Mesothelioma; Glycan Array; Immunoprofiles; Robotic Arrayer

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Table of Contents

	Page
Introduction……..	**4**
Body……	**4**
Key Research Accomplishments……..	**4**
Reportable Outcomes……	**5**
Conclusion……	**5**
References……	**N/A**
Appendices……	**N/A**

INTRODUCTION

This project is funded in order to investigate immunoprofiles of serum anti-glycan antibodies recognizing Mesothelioma-derived aberrant glycans in human subjects and in animal models of Mesothelioma. This is accomplished using a one of a kind printed glycan array which has been developed by us at the New York University School of Medicine (NYU SoM) and has now been expanded by addition of 177 novel glycan probes, many of which are Mesothelioma-specific. It is expected that the results of these experiments will allow us to diagnose and prognosticate Mesothelioma earlier during its development. Results of our experiments using rat model of human Mesothelioma should also provide leads into the immuno-preventive and immuno-therapeutic approaches to treatments of the military personnel of high-risk for this malignancy due to their potential long-term exposure to carcinogenic form of asbestos during their service.

BODY

We unfortunately have little to report on our project to grow rat mesothelioma cell lines in immune-competent animals. We were making preparations to start this experiment after we finally received IRB approval and after we had mycoplasma free cell line II-45. **At that point we were finishing the first project in October 2012 and then the entire vivarium at NYU was destroyed by Hurricane Sandy. We are now in a situation where we can house animals offsite either at the Alexandria center or at MSKCC, but these negotiations are continuing. As soon as we are assured of a place for the animals (probably within the next month) we will order animals in preparation to begin tumor injection and longitudinal blood harvest.**

KEY RESEARCH ACCOMPLISHMENTS

1. We have established the new glyco-laboratory with the dedicated print-room which now allows printing of large batches of glycochips of an enhanced quality.

2. We have developed the expanded glycan array platform, NYU-PGA-400 by adding 177 novel glycan probes, many of which are human Mesothelioma-specific. It is expected that this novel glycochip will allow us to diagnose and prognosticate Mesothelioma earlier during its development. We are now in a process of printing large batches of glycochips for AGA immunoprofiling in both human and our model-Meso-rat sera.

3. We have the protocols approved for the first long-term animal study for the immune responses to the exposure to asbestos in rats, and this experiment is now in its advanced stage **as reported in a complementary report from Dr. Huflejt**.

4. We have re-grown and prepared for implantations pathogen-free rat syngeneic II-45 Mesothelioma cell line and are waiting for approval of the protocol for the second arm of animal experiments involving injection of rat Mesothelioma cells and treatments of the resulting tumors. **These experiments will begin as soon as we have vivaria space approved**.

REPORTABLE OUTCOMES

None

CONCLUSIONS

1. Our new glyco-lab with its dedicated, nearly particle-free print-room allows us now to print glycochips of much improved quality, and with the higher efficiency. We are therefore confident that we will be able to accomplish all originally proposed tasks despite initial delays **due to the longer than expected time to the approval of animal protocols, previous sub-optimal conditions for glycochip printing, and the complete destruction of vivaria at NYU due to Hurricane Sandy**.

2. Developed in a meanwhile, our new glycochip NYU-PGA-400 will no doubt provide far more asbestos exposure- and human Malignant Mesothelioma-relevant immuno-information as compared with our previously used PGA-200 – largely due to the addition of novel, Mesothelioma-specific glycan probes, the design of which has been based on our results obtained with the previous study cohorts and recently published in Vuskovic et al., 2011.

REFERENCES

N/A

APPENDIX

N/A